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| 10/675,568 | 09/30/2003 | Timothy J. Daniel | BUCKFELLER 17-4-2-4 | 9978 |
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| HITT GAINES, PC AGERE SYSTEMS INC. PO BOX 832570 RICHARDSON, TX 75083 | | | EXAMINER MOORE, KARLA A | |
| | | | ART UNIT 1763 | PAPER NUMBER |

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,568

Applicant(s)

DANIEL ET AL.

Examiner

Karla Moore

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the pending restriction in the reply filed on 7 June 2006 is acknowledged. The traversal is on the ground(s) that the inventions are not independent. This is not found persuasive because the inventions are independent and distinct based on the USPTO procedures for determining independent and distinct inventions. What is required is, either, (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,841,624 to Xu et al. in view of U.S. Patent No. 6,106,630 to Frankel and U.S. Patent No. 6,146,504 to Patadia et al.

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5. Xu et al. disclose a physical vapor deposition chamber (not illustrated, but mentioned at column 1, rows 13-17 and column 8, rows 28-30) for depositing material on a wafer (120) substantially as claimed and comprising: a chuck (Figure 1, 110), wherein the chuck comprises a planar upper surface (112) and sidewalls extending downwardly therefrom; a removable pedestal cover (100) overlying the planar upper surface of the chuck; and wherein a planar backside of the wafer is in contact with the planar upper surface of the pedestal cover. Admittedly, the pedestal cover of Xu et al. does not comprise a singular, continuous, planar upper surface in the region overlying the chuck, but a plurality of intermittent planar upper surfaces in the region overlying the chuck. The cover is chemically removable (column 5, rows 41-46).

6. Xu et al. disclose the chamber substantially as claimed and as described above.

7. However, Xu et al. fail to teach the pedestal cover extending laterally beyond the sidewalls.

8. Frankel discloses a pedestal cover for both top and side surfaces of a chuck for the purpose of protecting all of the areas most susceptible to processing gases (column 10, row 24, through column 11, row 15). In Frankel, the lower surface of the pedestal cover is concave and completely receives the chuck therein during a processing method, such as material deposition.

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover in Xu et al. extending beyond chuck side walls (i.e. covering all top and side surfaces) in order to protect all areas of the chuck most susceptible to processing gas as taught by Frankel.

10. Xu et al. and Frankel disclose the invention substantially as claimed and as described above.

11. However, Xu et al. and Frankel fail to teach the pedestal cover defining a peripheral circumferential groove therein, wherein a circumference of the wafer extends radially inwardly of the groove.

12. Patadia et al. disclose providing a peripheral (with respect to the substrate) circumferential deposit collection channel on a substrate supporting device for the purpose of trapping deposit particles that do not deposit on the substrate thus preventing deposition and sticking on the backside of a processed substrate (abstract). In Patadia, a circumference of the wafer extends radially inwardly of an

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inner sidewall (124) of the groove. This is necessary; otherwise, the purpose of the groove (collecting material) would not be achieved.

13. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a peripheral circumferential groove on the substrate supporting device wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the groove in Xu et al. and Frankel in order to trap deposit particles that do not deposit on the substrate thus preventing deposition and sticking on the backside of a processed substrate as taught by Patadia et al.

14. With respect to claim 2, Xu et al. further teaches that the pedestal cover further comprises a plurality of pads (102) on an upper surface thereof, such that the wafer may be disposed on the plurality of pads.

15. With respect to claim 6, the limitations are similar to those of claim 1 and are addressed above.

16. With respect to claim 7, Xu et al. further teaches that the pedestal cover further comprises a plurality of pads (102) on an upper surface thereof, such that the wafer may be disposed on the plurality of pads.

17. With respect to claim 9, Examiner notes that the limitations are drawn to a method of using the apparatus and the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Examiner notes that Xu et al. also teach these method limitations at column 4, rows 17-19.

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al., Frankel and Patadia et al. as applied to claims 1-2, 6-7 and 9 above, and further in view Applicant's admitted prior art.

19. Xu et al., Frankel and Patadia et al. disclose the invention substantially as claimed and as described above.

20. However, Xu et al., Frankel and Patadia et al. fail to teach an aluminum deposition target.

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21. Applicant's admitted prior art teaches that aluminum targets are conventionally used in integrated circuit device manufacture (paragraphs 4-6 of specification).

22. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an aluminum deposition target in Xu et al., Frankel and Patadia et al. in order to perform integrated circuit device manufacture as is conventionally done as taught in the admitted prior art.

23. Claims 4, 5, 10-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,841,624 to Xu et al. in view of U.S. Patent No. 6,106,630 to Frankel.

24. Xu et al. disclose a physical vapor deposition chamber (not illustrated, but mentioned at column 1, rows 13-17 and column 8, rows 28-30) for depositing material on a wafer (120) substantially as claimed and comprising: a chuck (Figure 1, 110) comprising a planar upper surface; and a removable pedestal cover (100) overlying the planar upper surface of the chuck, wherein the wafer is in contact with and positionable over the pedestal cover extending beyond a side of the pedestal cover during material deposition. The cover is removable using a chemical process (column 5, rows 41-46).

25. However, Xu et al. fails to teach the pedestal cover having downwardly directed sidewalls defining an opening, wherein the chuck is disposed within the opening.

26. Frankel discloses a pedestal cover for both top and side surfaces of a chuck for the purpose of protecting all of the areas most susceptible to processing gases (column 10, row 24, through column 11, row 15). In Frankel, the lower surface of the pedestal cover is concave and completely receives the chuck therein during a processing method, such as material deposition.

27. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover in Xu et al. cover having downwardly directed sidewalls defining an opening, wherein the chuck is disposed in the opening in order to protect all areas of the chuck most susceptible to processing gas as taught by Frankel.

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28. With respect to claim 5, Xu et al. further teaches that the pedestal cover further comprises a plurality of pads (102) on an upper surface thereof, such that the wafer may be disposed on the plurality of pads.

29. With respect to claim 10, the limitations are similar to those of claim 4 and are addressed above.

30. With respect to claim 11, Xu et al. further teaches that the pedestal cover further comprises a plurality of pads (102) on an upper surface thereof, such that the wafer may be disposed on the plurality of pads.

31. With respect to claim 13, Examiner notes that the limitations are drawn to a method of using the apparatus and the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Examiner notes that Xu et al. also teach these method limitations at column 4, rows 17-19.

32. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al., Frankel and Patadia et al. as applied to claims 1-2, 6-7 and 9 above, and further in view of U.S. Patent No. 5,656,093 to Burkhart et al.

33. Xu et al., Frankel and Patadia et al. disclose the invention substantially as claimed and as described above.

34. However, while Xu et al. do teach that the pads of the pedestal cover may comprise a conducting material, stainless steel is not explicitly taught as the conducting material.

35. Burkhart et al. teach the use of stainless steel as a material for conducting pads of a pedestal cover for the purpose of using a material having superior contact properties (column 2, rows 15-20).

36. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover/pads comprising stainless steel in Xu et al., Frankel et al., and Patadia et al. in order to use a material with superior contact properties as taught by Burkhart et al.

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37. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al. and Frankel, as applied to claims 4-5, 10-11 and 13 above, and further in view of U.S. Patent No. 5,656,093 to Burkhart et al.
38. Xu et al. and Frankel disclose the invention substantially as claimed and as described above.
39. However, while Xu et al. do teach that the pads of the pedestal cover may comprise a conducting material, stainless steel is not explicitly taught as the conducting material.
40. Burkhart et al. teach the use of stainless steel as a material for conducting pads of a pedestal cover for the purpose of using a material having superior contact properties (column 2, rows 15-20).
41. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover/pads comprising stainless steel in Xu et al. and Frankel in order to use a material with superior contact properties as taught by Burkhart et al.

Response to Arguments

42. Applicant's arguments filed 7 June 2006 have been fully considered but they are not persuasive.
43. In response to Applicant's argument that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).
44. With respect to Xu et al. and Frankel, Frankel, which is concerned with protecting a chuck as in Xu et al. and the claimed invention, teaches that a pedestal cover can be provided to protect all surfaces of a chuck that may be exposed to a processing environment by extending the cover over the side walls of a chuck, in addition to the top surface. This is motivation for combination. While there may be differences in the disclosures of Xu et al. and Frankel, they do not teach away from each other. Both are concerned with covering a wafer supporting chuck and therefore one of ordinary skill in the art would be inclined to incorporate their advantageous features where appropriate. Applicant's argument that the

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references teach away from one another is misplaced. Each of the references provides for a substrate located in a spaced-apart relationship with respect to a pedestal via a pedestal cover as is disclosed in the claimed invention. Further, the fact that the disclosures of the relied upon prior art provide various common and uncommon reasons for providing a pedestal cover does not negate motivation for combination, instead it provides additional motivation for providing a feature with a number of varied benefits.

45. With respect to Xu et al. and Patadia et al., Patadia et al., which is concerned with protecting a wafer to be processed from unwanted particles, deposition, etc. (as in Xu et al. and the claimed invention), teaches that by providing a peripheral circumferential deposit collection channel on a substrate supporting device -- particles that do not deposit on the wafer can be trapped, thus preventing deposition and sticking on the backside of a processed substrate. This is motivation for combination. While there may be differences in the disclosures of Xu et al. and Patadia et al., they do not teach away from each other. Both are concerned with protecting a wafer and pedestal (either directly or indirectly) and therefore one of ordinary skill in the art would be inclined to incorporate their advantageous features where appropriate. Protection of a wafer and protection of a pedestal in a wafer processing apparatus would not be two mutually exclusive objectives for one of ordinary skill in the art. Instead one of ordinary skill in the art would look to find a balance that would allow for optimal processing.

46. With respect to Applicant's argument that none of the references recites a removable pedestal cover, Examiner points out that the cover of Xu is indeed chemically removable. See column 5, rows 41-46. This feature was pointed out in the previous office action.

47. Examiner further notes that the provision of collection channels in Patadia and the reason for reliance thereupon is for the purpose of reducing material deposition on the edge of the substrate.

Conclusion


48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 63285033; KR 2002061878 A; USP 5275683; USP 5668524; USP 5969934; and USP 6620736 each teach pedestal covers.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore
Primary Examiner
Art Unit 1763
9 August 2006